

Iowa Communications Network**OSP Log # 8150407, Links 1108, 1108D, 1109, & 1131****ISU Ag Engineering & Agronomy Farm****Boone County, Boone, ICN /FOTS Relocation (SP125), 1308 "U" Avenue****Overview of the Project:**

The ICN will be relocating its' current FOTS hut located at the intersection of Hwy 30 & "T" Avenue to the ISU Ag Engineering and Agronomy farm at 1308 "U" Avenue (400' south of "U" Avenue & Hwy 30). The following cable relocations will be needed:

- A. At the intersection of "T" Avenue & 220th Street place handhole # 1 and expose 50' of the existing 24F cable. Bore/plow from said intersection a new 48F cable along the south lane of 220th Street to the intersection of 220th Street & "U" Avenue. Proceed southbound on "U" Avenue along the East lane of "U" Avenue and place proposed handhole # 2 in the North ROW of Hwy 30. Bore a 2" diameter HDPE duct from proposed handhole # 2 and extend the duct & fiber along the east ROW of "U" Avenue to an existing 2" diameter PVC pipe stub at the Northeast corner of the new FOTS building. Extend the 48F cable into the building. (cable to be bored and placed in 2" dia. HDPE where noted on plans and any culvert crossings)
- B. Expose 50' (for a splice tail) of an existing 36F cable located approximately 237' east of the centerline of "U" Avenue in the North ROW of Hwy 30. Place proposed handhole # 3 at this location and bore a new 2" diameter HDPE duct and 48F cable under Hwy 30, across the ISU property to a 2" diameter PVC pipe stub on the east side of the new FOTS building. Extend the 48F cable into the building.
- C. Expose an existing ICN duct and fiber located approximately 228' south of the centerline of Hwy 30 and 65' west of the centerline of "U" avenue and place handhole # 4. Ring cut the duct and work into the handhole. Bore a 2" diameter HDPE duct from handhole # 4 along the west ROW of "U" Avenue and under "U" Avenue to a 2" diameter PVC pipe stub at the Northwest corner of the new FOTS building. Pull/place a new 48F cable from the FOTS building through the new duct to an existing handhole in the Northwest corner of "U" Avenue & Hwy 30.

Preparatory Tasks & Responsibilities:

1. Secure all necessary locates from "Iowa One Call."
2. Locate all private utilities on the ISU Ag Engineering and Agronomy farm property. Notify ISU Farm Manager 24 hrs. prior to work on the farm property.
3. As stated in A and B of the overview there are two locations that require the contractor to expose 50' of existing fiber. These excavations shall be enclosed by steel posts with orange safety until the ICN splicer has completed the cutover. After cutover the fiber contractor shall remove the fences and backfill the excavations.

Duct Installation

1. Provide 2-inch HDPE, SDR 13.5 duct in the following locations:

From proposed handhole # 2 described in "A" (above) to the FOTS building (approximately 520')
 From proposed handhole # 3 described in "B" (above) to the FOTS building (approximately 550')
 From proposed handhole # 4 described in "C" (above) to the FOTS building (approximately 260')
 Under the paved drives & culverts on "U" Avenue & 220th Street (approximately 600')

2. It shall be the sole responsibility of the contractor to ensure that the fiber installation is in the public Right-of-Way on "U" Avenue, Hwy 30, or on ISU Ag Engineering & Agronomy Farm property.
3. Bore under Hwy 30 (2 locations) and "U" Avenue (1 location), See engineering plans for locations and distances off existing public ROW when provided. See also bores for paved drives and known culverts on "U" Avenue & 220th Street.
4. **NOTE:** Any additional culverts encountered when placing fiber along 220th Street and "U" Avenue will require the fiber to be bored under the culvert and placed in 2" HDPE.

Handholes: Install an ICN-furnished 24" X 36" X 30" handhole with 20T lid at the following locations per ICN Standard Practice:

1. HH # 1, Northeast corner of the intersection of 220th Street & "T" Avenue.
2. HH # 2, Northeast corner of the intersection of "U" Avenue & Hwy 30.
3. HH # 3, 237' feet east of the Northeast corner of the intersection of "U" Avenue & Hwy 30. (North ROW of Hwy 30)
4. HH # 4, 228' south of the centerline of Hwy 30 and 65' west of the centerline of "U" Avenue.

Fiber Installation

1. Install a 10,400 foot ICN-furnished, armored 48-strand single mode fiber from HH # 1 to the new FOTS building.(this includes a 50' splice tail at each end and a 50 slack coil at HH # 2)
2. Install an 800 foot ICN-furnished, armored 48-strand single mode fiber from HH # 3 to the new FOTS building.(this includes a 50' splice tail at each end)
3. Install an 800 foot ICN-furnished, armored 48-strand single mode fiber from the new FOTS building to the existing handhole in the Northwest corner of the intersection of Hwy 30 & "U" Avenue.(this includes a 50' splice tail at each end and a 50' slack coil at HH # 4)

Building Entry at the new FOTS Building

1. The site contractor will have left a 2" diameter PVC stub below grade at each of the 3 locations noted on the drawings. The stub locations will be identified by a stake at grade.

NOTE: At the conclusion of the project, ensure that a pull rope is left in ALL pathways, both inside and outside, new and existing.

Splicer Responsibilities:

(Splicing excluded from Construction Bid – keep this note if handling splicing separately)

ICN Provided Materials per Table Below: Contractor shall pick up ICN-furnished materials at the ICN warehouse in Des Moines. Contact the ICN warehouse 48 hours in advance to pick up materials; contact Paul Damge (515-725-4749) to ensure availability.

Contractor shall supply all other materials required for proper installation, including but not limited to: HDPE, Grounding and Tracer Wires, Rock, Wire Mesh, etc.

ICN Provided Materials – Item	Part #	Quantity	Unit	Note:
48 strand Armored SM fiber		12,000	LFT	
24" X 36" X 30" TD handholes w/ 20T lid	PC243630SN20	4	EA	

ICN Responsibilities:

1. Project Management
2. ICN will secure all necessary DOT permits.
3. ICN furnished materials; see above.

ICN Point of Contact for this Project:

Mike Broderick
515-725-4610 office
515-330-7139 cell

Other Points of Contacts:

1. Property Owner: ISU Farms Manager, Richard VanDePol, 515-296-4081, Cell 515-291-1959

Work Start Date: Work may begin upon award of the bid and completion of the contract. Only written modifications to this Scope of Work are binding - Verbal changes to this scope of work by any person or persons are not binding, unless confirmed in writing.

Completion Date: Fiber, Duct, & handholes placed not later than 9-20-16. The fiber contractor will need to coordinate with ICN's site contractor regarding the connections and work at the hut. The hut delivery and crane set of the building is expected 9-9/9-12.

As previously stated the fiber contractor will need to return after cutover for removal of safety fence and backfill of excavations.

Quotes Due Date:

Quotes must be received by Sheri Stephens, ICN Contracting, **NLT 2PM on August 9th, 2016.**

Quotes: ICN can require a breakdown of lump sum bids into labor and materials.

STANDARD INSTALLATION REQUIREMENTS:

Note red, highlighted changes to ICN standards installation requirements as of 1/28/2016.

General Requirements:

1. The contractor **shall** pothole all existing utilities.
2. Provide the owners of any natural gas utility 48 hours advance notice that work is scheduled in the vicinity of their lines/mains so that they can provide standby and protect services.
3. Maintain proof of notification to and receipt of notification by the gas utility.
4. Permits and coordination
 - 4.1. Secure all necessary state and local (city, county, etc.) permits, public or private easements, facility permits, usage permits, and any other permit required by an Authority Having Jurisdiction (AHJ).
 - 4.2. ICN will obtain and provide copies of IDOT permits.
 - 4.3. If permits are required to be in the name of the owner rather than the contractor, the contractor shall prepare the permit for the owner's signature.
 - 4.4. Coordinate installation with all owners and AHJ over the route, the fiber, Right-of-Way and buildings in which end points will be located.
 - 4.5. Failure to coordinate with the AHJ and to obtain all necessary permits is at the peril of the contractor.
 - 4.6. Right-of-Way Permit fees are an authorized extra above the quoted bid price. Excavation permits shall be by the contractor.
 - 4.7. Ensure all facilities are placed within the public Right-of-Way.
5. Ensure that personnel working in the ROW are equipped with and use proper safety equipment and attire.
6. **All tools and test equipment required to do a project shall be provided by the Contractor or its subcontractor(s). Security of tools and test equipment shall be the responsibility of each worker. The ICN shall not be responsible for the security of any property left on ICN's property or on property controlled by the ICN or the State of Iowa.**
7. **Contractor shall be responsible for instructing its employees in safety measures considered appropriate for the job. In addition, the Contractor shall not permit placing or use of tools or materials in traffic lanes or other locations. The tools or materials shall not be placed in such a manner so as to create safety hazards to State employees, contracting agency employees, the public or themselves.**
8. Excavations and Trenches: The ICN requires all open excavations or trenches to be monitored and attended to during construction per. The ICN requires all open excavations and trenches backfilled the same day. If the contractor is required to leave an excavation or trench open, then the contractor shall properly fence and/or cover the excavation for safety. Contractor shall follow all OSHA requirements for excavation and trench safety.
9. **Contractor and its employees shall comply with all OSHA regulations. The contractor shall comply with all applicable State and Federal Laws.**
10. **Contractor shall comply with all Iowa One Call requirements as provided by Iowa Code, Chapter 480.**
11. Provide all labor and supervision for the project.
12. Provide and install materials needed to result in a fully functional system meeting ICN standards, whether or not the materials or methods are specifically mentioned in this document. See the list of ICN-furnished materials.
13. Install cable route markers furnished by ICN. Where possible, install markers adjacent to poles, buildings or in other protected areas.
14. A copy of this Scope of Work and the Engineering Plan for this project shall be on site and available any time work is being performed. Failure to have the required documents on site may result in ICN requiring the contractor to stop working until the required documents are on-site.
15. **Subcontractors shall meet the same qualifications stated for Contractors. Contractor shall obtain approval of the contracting agency's project manager prior to using a subcontractor on any project. Once a subcontractor has been approved, it may be used on other projects.**
16. Restore all damage to private property, Right-of-Way, ICN property, and any other property damaged in the course of the work.
 - 16.1. **Any disruption of grass in an individual's yard or in a private maintained area of the public right of way (the area between the sidewalk and the street curb) must be restored through re-sodding. Any disruption of the grass in the median way or an unimproved shoulder must be restored either through re-sodding or re-seeding as required by the ROW owner.**
 - 16.2. Areas shall be restored to original or better condition.
 - 16.3. Dirt shall be mechanically compacted around handholes and pits.
 - 16.4. Lawns shall be sodded with like grass.

16.5. Contractor is responsible for watering the sod until it has knitted to the ground beneath.

16.6. All debris shall be removed from the construction areas including but not limited to: construction materials, trash, large objects or stones within backfilled areas, etc.

Duct Installation Requirements

1. HDPE duct shall be no less than 48 inches deep.
2. Duct shall be installed in the public Right-of-Way.
3. When crossing Iowa Highway in DOT Right-of-Way, duct shall be no less than 48 inches below grade under the roadway and shoulders. HDPE may be used under the roadway and shoulders if installed at a minimum depth of 48".
4. Should it be necessary to cross private property, the Contractor may apply to the ICN for an exception, and request permission to secure an easement. The easement is required to be in the name of ICN and the contractor shall have the easement prepared by a Land Surveyor licensed in the state of Iowa. Contractor shall be responsible for all fees unless previously authorized by the ICN.
5. At the conclusion of the project, provide and leave a pull rope in all ducts, conduits and pathways, including indoor, outdoor, new and existing.
6. Dirt shall be mechanically compacted at all duct splices, bore pits and around handholes.
7. Ground shall be restored to the condition found prior to construction and debris removed prior to sodding or seeding.
8. All conduits shall be plugged via duct seal or other method upon completion of cable installation.
9. If Schedule 40 PVC conduit is utilized, all angles (45, 90 degree or other) require fittings to long sweep to accommodate minimum cable bend radiuses.
10. The ICN requires pictures by the contractor and/or on-site inspection by ICN staff prior to completion of the project where pipe and fittings are not exposed; i.e. underground, behind a wall, etc.

Handhole Requirements

1. Install handholes so that the lid is level and flush with the surrounding natural grade. The lid SHALL NOT extend above the surrounding natural grade.
2. Provide ¼" opening hardware cloth type screen wire below the handhole.
3. Provide 12 inches of "pea gravel" or rock no larger than ¾" below the handhole. Rock shall be compacted. Gravel shall extend a minimum of 6 inches beyond the outside walls of the handhole.
4. Do not place gravel inside handhole above the hardware cloth.
5. Conduit shall extend a minimum of 6" above the hardware cloth/gravel.
6. Failure of the contractor to install handholes as specified will cause the contractor to return and re-install the handhole according to this specification before payment for the project is made.
7. Handhole installations shall follow ICN standard practice engineering plan.

Fiber Installation Requirements

1. Install fiber according to industry "Best Practices".
2. The contractor shall not violate the manufacturer's minimum installation bend radius when the cable is under tension, or the minimum installed bend radius.
3. To prevent exceeding the manufacturer's maximum pulling tension during installation of the fiber optic cable, the contractor shall use a "Break-away" pulling swivel when installing cable.
4. The "Break-Away" function shall activate at or below the maximum pulling tension specified by the cable manufacturer.
5. The contractor shall test all strands of the fiber, on the reel, prior to beginning fiber installation. Confirm that all strands meet manufacturer's loss specifications.
6. The contractor shall field verify all lengths and existing conditions prior to starting construction.
7. Slack loops in handholes shall be coiled, installed, and secured to avoid damage to the coil and not interfere with lids.
8. Slack loops at splices shall be coiled to match the existing fiber cable tails and allowance for splice preparation.
9. ICN Fiber in all handholes shall be labeled with ICN wrap around cable tags or other labeled cable tags.

Building Entry Requirements

1. Weather-seal all penetrations.
2. Use mortar or similar cement to seal penetration of brick or cement block.
3. Firestop penetrations of any fire-rated floor, wall or ceiling.
4. Replace the Firestop material in any existing Firestopped penetration used by the contractor.
5. All outdoor conduits, of any length, shall be Galvanized Iron Pipe (GIP). EMT, PVC and plastic are prohibited.
6. Immediately upon installation, seal the ends of all ducts with duct seal or expansion foam to prevent siltation or filling with moisture. This applies to both new and existing ducts.
7. Exterior exposed conduit shall be Galvanized Iron Pipe. EMT and plastic prohibited.
8. At the conclusion of the project, ensure that a pull rope is left in ALL pathways, both inside and outside, new and existing.

Locate Facility Requirements

1. Tracer wire shall be continuous.
2. Splices in the tracer wire are not allowed. If tracer wire is accidentally severed, request permission from ICN to splice.
3. Wire splices only in handholes.
4. Use either an epoxy splice kit, Scotch 3M 3832 or a Molex PermaSeal Butt Splice. 10-12 Ga. Splice materials SHALL be designed for underground applications.
5. Leave the wire splice visible in the handhole.
6. Route a ground wire from the ground inside the building, through the entry to the TII 136 terminal.
7. Secure all riser conduits with 3 each two-hole conduit straps.
8. Wire the pedestal/terminal so that locates may be performed in any direction and from the far end.
9. Do not leave any exposed tracer wire or ground wire.
10. Permanently ground the tracer wire at the handhole on the furnished ground rod.
11. At the conclusion of the project leave the tracer wire shield shorted to ground in the locate terminal.
12. Use tracer wire that is rated for direct burial where required. THHN insulation is acceptable for placement within duct, handholes, or enclosures, or any location not in direct continuous contact with soil or water.
13. Label all wires in the locate terminal/pedestal/TriView. (I.e. "Ground", "Facing DMACC", "Facing North" etc.)
14. Failure to label the locate wires will cause the contractor to return and properly label the wires before payment for the project is made.
15. Bond tracer wire(s) **within** splice enclosures utilizing a 3M 4460-D\FO Shield Bonding Kit.
16. Route tracer wire(s) out of splice enclosure through a single port utilizing a FOSC closure sealing kit.
17. At splice locations with no locate pedestal, tracer wires shall be bonded together, within the splice enclosure.
18. At each end of any tracer wire, use appropriate-sized ring terminal (crimp) connectors.

DELIVERABLES/ACCEPTANCE:

1. Contractor shall provide construction redline as-builts with:
 - 1.1. Offsets to fixed objects to the cable/conduit running line, handholes and new facilities.
 - 1.2. Meter marks of cable installations at handhole entry/exit, splice locations, building entries, etc.
 - 1.3. **One original set of as-built drawings must be provided within two (2) weeks after completion of construction for the ICN management records. Redline as-built drawings must be complete.**
2. Contractor shall provide splicing redline of all splicing completed and validation that the splice plan was followed.
3. Contractor is responsible to locate fiber until acceptance by the ICN. Acceptance includes:
 - 3.1. Submission of construction and splicing red line drawings by contractor.
 - 3.2. Assignment of link number by the ICN (if applicable).
 - 3.3. Submission of final as built drawing by the ICN to the ICN Network Maintenance Provider.
 - 3.4. Submission to Iowa One Call and the ICN Network Maintenance Provider's contract locator.
 - 3.5. The measurements in the Statement of Work are estimates and need to be verified by the contractor.
4. **Only written modifications to this Scope of Work are binding** - Verbal changes to this scope of work by any person or persons are not binding, unless confirmed in writing.
5. Final payment will not be processed until all deliverables are received and accepted.

ENGINEERING CHECKLIST (DELETE WHEN DONE)

Worksheet:				
Length Calculation	Fiber	Tracer	Conduit	Notes
Inside: Up, Down, Horizontal				
Slack Inside				
Link Length				
Enroute Slack				
Handhole Slack				
Up, down				
Link Length				
Other				
Total Calculated				
Footages are Actual (no factors)				
Footage Used for Estimate				

Scope Check List**Field Notes**

Contacts on Field Notes

Project location

Say location and floor of FOTs, data room, mechanical rooms, etc.

Scope checklist**Verify:**

Tracer terminal locations

Tracer grounds

Footages of fiber

Footage of tracer wire

Number of tracer terminals

Number of ground rods

Number of FDPs

Footage of fire retardant innerduct

Contact Clinic-school-??? Prior to arrival

Splicing Options

Fiber materials

FDP wall – rack

Number of Bulkheads

Number of pigtails

Spell check

Include on Engineering Plans

Locate points -- Use word description - Include type of device.

Size of HH – number of ducts and size of ducts

Duct – size – contents – ownership

Cable – fiber count – SM/MM - Armored/Dielectric

Use RED lines for new construction – Switch color where for existing fiber or conduit.

OTHER STANDARD STATEMENTS:**Exception/Additions to Standard Installation Requirements – Other Standard Language 4.1**

The contractor shall not permit an employee who is a registered sex offender convicted of a sex offense against a minor, on real property of the “insert name of entity” in accordance with Iowa Code Section 692A.113 and shall ensure all services performed comply with Section 692A.113 of State of Iowa Law. It shall be the sole responsibility of the contractor to ensure compliance with this section; including any subcontractors. The contractor shall indicate via a statement they will comply with this requirement.

Quote Section:

Items under the “Splicer Responsibilities” are excluded from the Construction Bid. Splicing will be handled separately. Contractor is responsible for the installation all other items required in this Scope of Work.